INSIDE: FORT PECK'S WEIGHT-GAIN DIET

Montana Outdoors

MONTANA FISH, WILDLIFE & PARKS | $4.50

MARCH–APRIL 2025

WHOO ARE YOU?

A guide to Montana's 15 owl species

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NASP: RIGHT ON TARGET
A RECIPE THAT'S GREEK TO ME
HOW THE HUNTING REGS GET BUILT
PART MOSS, PART FUNGUS, PART WHO KNOWS?

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STUFFED TO THE GILLS Walleye and other game species at Fort Peck Reservoir are growing huge by consuming a salmonid imported from the Great Lakes. Learn more starting on page 38. Photo by Eric Engbretson/ Engbretson Underwater Photography.

COVER The long-eared owl lives year-round in shelter belts and juniper thickets statewide. See more on owls starting on page 28. Photo by Doug Tate.

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The bad apples

The article in the November-December issue describing the continued killing of raptors ("Bad Shots") is final proof (to me) that we humans are evolution's one and only mistake and failure.

Lee Stroncek
Livingston

Why the gratitude?

I just read the director's message titled, "Thanks, landowners, for the water" (September-October 2024). The title says we need to be grateful to landowners, but the essay then goes on to say that there are a bunch of ways the state has to force the hand of landowners to make the water last for all users. It strikes me as strange that we should thank someone for not using up a shared resource.

Brian Thompson
Great Falls

Editor replies: Water is a shared resource in the sense that we all use it, but some people have more rights to that use than others. The legal framework for water rights is called the Prior Appropriation Doctrine, commonly summarized as "first in time, first in right." That means ranchers, farmers, and other landowners with the oldest claims have the first (senior) priority of water. But many landowners voluntarily don't use all their water, allowing much of it to continue flowing downstream for the good of others. Sometimes this comes by sacrificing hay or other crop production. Some farmers and ranchers invest in making their irrigation ditches more efficient. Others coordinate with fellow irrigators so that all of them are using less water than they have a legal right to use.

Lived to tell about it

I was so pleased to see your advocacy for increased utilization of bear spray and to see it printed in your November-December issue (Sketchbook: "Spray, don't slay"). My friend and I had a serious encounter with a female grizzly and her young cub last summer in the Absarokas, and bear spray saved our lives. I have no doubt at least one of us would not be here if we had carried only a gun. Instead, we are safe, continuing to enjoy the outdoors, and both the mother bear and cub are, too. I expect the bears will carry that experience with them forever and learn from it much like we have. Bears do not deserve to die simply for being themselves when we enter their domain.

BAD SHOTS
Despite federal protections and the risk of jail time for perpetrators, raptors across the West are still being killed for "fun" and profit.

Jacob Lilly
Livingston

"I expect the bears will carry that experience with them forever and learn from it much like we have."

Focus on cans, not can't's

I really appreciated the Sketchbook column in your September-October issue ("Seeing the open doors"). I am a 78-year-old lifelong hunter who has had multiple hand surgeries for arthritis as well as three hip replacements—the last one after I was hit by a car while cycling, forcing me to retire. Recovering from those injuries has taken endless physical therapy and resolve. As my wife, a child psychologist, said after I complained about being unable to do many of the things I loved, "Don't think about what you can't do, think about all the things you still can do." I think that pretty well summarizes the essay's point.

The accident was four years ago, and so far this year I have duck hunted in North Dakota and hunted pheasants and deer in South Dakota. I shared the editorial with all of my age-group hunting friends. It's a wise way to look at not just hunting, but life. Thanks.

Garrett T. (Gary) Bayrd, MD
Minnetonka, MN

Bird renaming backlash

Regarding the short Outdoors Report piece in the September-October 2024 issue titled "New names slated for some bird species," which says that 45 well-known Montana birds will be getting new names from the American Ornithological Society: If they are well known, why change their names? This sounds like the woke clan at work. These birds are part of our history and should stay that way. Stop this craziness now.

John Taylor
Drummond

Working Lands issue, cont.

Your May-June 2024 Working Lands issue was the most comprehensive view of Montana agriculture I have ever seen, and one to be saved for posterity. But you left out something very important: communication.

In 1952, when I came to eastern Montana, there were no telephones here. We finally got phones in 1958, and what a difference that made. We could call a doctor in a medical emergency, or find out when Amtrak would be arriving or leaving, or when a store might be open. Roads were sometimes impassable then, so saving trips was a real blessing. Now we can communicate around the world, check markets, order supplies, and more by means of the internet. We would be back in the horse-and-buggy days without modern communication.

Mildred Dommer
Ledger

The May-June 2024 Working Lands issue was both enlightening and entertaining. Future issues will now have to step up to match this effort. However, I must say that I was disappointed not to see more photos of eastern Montana with related remarks and articles. I counted only four identifiable pictures of eastern Montana in the entire issue. In the future, please include Montana's "outback" in your magazine. This great area and its people deserve it.

Miles LaRowe
Red Lodge

Venison Souvlaki

By Tom Dickson | Preparation time: Lengthy | Cooking time: 8 minutes | Yield: 4 servings

After butchering a deer or pronghorn, I always end up with a mountain of leftover chunks trimmed off the steaks and roasts. The smallest bits go into a bag for sausage. I use the larger thumb-size trimmings from the shoulder for stews, and those from the backstrap, rump, and thigh for stroganoff, kabobs, or souvlaki.

Souvlaki is a Greek street food consisting of small pieces of marinated meat grilled on a skewer then served in warm pita bread with sliced tomatoes, onions, and cucumbers topped with tzatziki (tsah-ZEE-kee) sauce. Lamb or pork is the traditional meat, but venison works just as well, as does chicken breast.

Souvlaki is generally eaten for lunch or as a snack, but in Greek restaurants it is also served as dinner, paired with French fries and a tomato-feta-cucumber salad.

While souvlaki is a good way to use trimmings, you can also cut up a venison steak or small roast into 1-inch pieces.

This recipe is a variation on one I first saw in the *Buck, Buck, Moose* venison cookbook. ■

—Tom Dickson is the editor of Montana Outdoors.

Kitchen Essentials

Of the two dozen game cookbooks I've collected over the years, the one I use most often is *Buck, Buck, Moose* by Hank Shaw. Shaw packed his hardcover cookbook with more than 125 venison recipes from around the world—including my favorites: Icelandic Venison with Blueberry Sauce, Vietnamese Shaking Venison, and Jagerschnitzel. Winner of a James Beard award for his website *Hunter Angler Gardener Cook* (honest-food.net), Shaw was a consulting editor for the wild game and seafood sections of the latest edition of *The Joy of Cooking*. Also excellent are his *Hook, Line, and Supper* (fish) and *Pheasant, Quail, Cottontail* (upland birds and small game) cookbooks, all beautifully illustrated with photographs from the brilliant game dish photographer Holly A. Heyser.

FROM TOP: SHUTTERSTOCK; HUNTGATHERCOOK.SHOP

MARINADE

(For 1.5 lbs. venison backstrap or leg meat, cut into 1-inch cubes, all silver skin trimmed off.)

½ c. olive oil
¼ c. lemon juice
2 T. dried oregano
2 t. dried thyme
2 t. ground black pepper
1 t. salt

DIRECTIONS

Add meat to marinade ingredients in a sealable plastic bag. Squish contents to mix thoroughly. Refrigerate 2–24 hours.

Take bag out of the fridge 30 minutes before cooking so it can reach room temperature. Meanwhile, heat grill on high, clean grates, and soak wooden skewers (if using instead of metal) in water so they don't burn.

Thread venison on skewers and grill on oiled grates about 4 minutes per side, 8 minutes total.

Serve venison in pita warmed on the grill, topped with chopped tomatoes, onions, and cucumbers and tzatziki sauce.

TZATZIKI SAUCE INGREDIENTS

1 c. plain Greek yogurt
½ c. seeded, grated cucumber
1 t. lemon juice
3 T. olive oil
3 T. red wine vinegar
1 large garlic clove, minced
1 T. finely chopped fresh dill or ½ t. dried
Salt and pepper to taste

DIRECTIONS

Grate cucumber using a box grater. Squeeze grated cucumber in cloth or paper towels to remove as much liquid as possible. In a medium bowl or food processor, combine yogurt, cucumber, lemon juice, olive oil, vinegar, garlic, and dill. Blend until well combined. Taste and season with salt and pepper. Refrigerate at least 1 hour before serving. ■

What I bring to FWP

As the new director of Montana Fish, Wildlife & Parks (they tell me I'm the 27th since the department was established in 1901), I'd like to introduce myself to the readers of *Montana Outdoors*.

I grew up on a ranch west of Choteau along the Rocky Mountain Front. After college, I returned to the area and ran a livestock operation with my husband, raising three kids along the way. After serving three terms as a Montana legislator, I worked for the Montana Department of Agriculture, eventually becoming deputy director and then director. Governor Greg Gianforte recently asked me to lead FWP, an agency we both consider essential in a state defined by its abundant fish and wildlife resources and renowned outdoor recreational opportunities.

I recognize that my background in ranching, legislation, and administration is not a typical resumé for this position. I don't even have a biology degree. But here's what I do bring to the job.

First of all, I don't need science credentials. FWP already has some of the top fisheries and wildlife scientists in North America, like elk research biologist Dr. Kelly Proffitt in Bozeman, who recently became our Region 3 supervisor, and Beaverhead River biologist Matt Jaeger in Dillon. My job as director is to help these and other department employees get the resources and support they need to continue excelling at their science, management, and customer service jobs. I'm also responsible for FWP's financial sustainability, operational efficiency, strategic management, and future preparedness. If I don't fully understand all the nuances of biological carrying capacity, instream flow, or habitat fragmentation, I'll ask one of the department's many capable and qualified employees.

Two, the Montana Legislature has a major influence on all state agencies, FWP in particular. Legislators approve or reject requests for license fee increases needed to help the agency keep pace with inflation and do things like hire more bear specialists to reduce conflicts between people and grizzlies, replace aging infrastructure at state parks, and acquire new fishing access sites or wildlife management areas. My experience at the capitol will help this department work cooperatively with legislators so they have the information they need to make prudent decisions regarding our budget and staffing and the laws directing our resource management.

Three, as more people move to Montana to recreate and buy land, public access is a bigger issue than ever. Not only access to private land, but access through private property to the roughly 2 million acres of state and federal holdings that are landlocked or otherwise inaccessible.

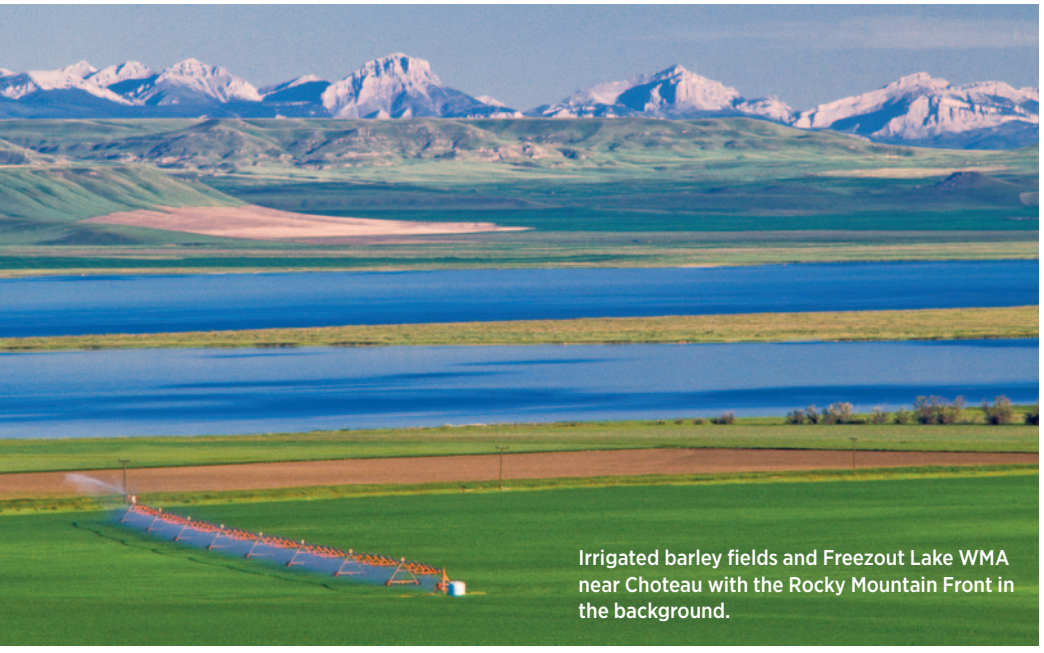
Governor Gianforte told me that one of the main reasons he wanted me here is to build on my credibility with the ag community to find new and better ways for people to reach currently off-limits public lands and develop new incentives to help open the gates of more private holdings. What's more, with 70 percent of wildlife habitat east of the Divide on private land, FWP needs even stronger partnerships with farmers, ranchers, and other property owners to meet its stewardship responsibilities.

In addition, as a livestock operator myself, I understand the apprehension and frustration of those in our business regarding grizzly bears and wolves. I'll use that insight to help FWP do an even better job of reducing livestock depredation while maintaining healthy populations that are socially acceptable in size and range.

Maybe more than anything, I bring to this position a record of forming relationships and reaching mutually agreeable solutions. I believe in treating people with respect, even if we disagree, and I recognize that all Montanans prize hard work, honesty, trustworthiness, integrity, and justice.

By building more partnerships based on these core values, especially with ag producers, FWP will be able to extend its reach and find new and more effective ways of providing stewardship for Montana's fisheries, wildlife, and state parks.

—Christy Clark,
Director, Montana Fish, Wildlife & Parks



Irrigated barley fields and Freezout Lake WMA near Choteau with the Rocky Mountain Front in the background.

JOHN LAMBING

NICK DANIELSON/MONTANA FWP

CARNIVORE COUNTER

SARAH ZIELKE
Wolf-Carnivore Management Specialist, Conrad

AS A WOLF-CARNIVORE management specialist, I'm often out in the field looking for wolves. In this photo, I'm using a radio receiver to locate a collared wolf along the Rocky Mountain Front. The collars we put on wolves during captures give us GPS locations, but sometimes we need to use their radio frequency to check in on them.

This is just one of several ways we wolf specialists keep tabs on packs to make sure the state maintains a stable population. Only a relatively small number of wolves wears GPS collars, so we also document packs by using trail cameras, track and scat surveys, and reports from ranchers and others.

In addition, my job entails working with private landowners, agricultural producers, and the public. I provide them with information on wolf activity and conflict-prevention tools such as livestock carcass removal, range riding, and fladry (fence flagging) to scare off wolves from areas with livestock. I really depend on those landowners for information on wolf activity and for access to private property.

One of the biggest challenges in this job is trying to balance people's diverse opinions on carnivores. For example, some people say that wolves are killing all the elk and that we need to get rid of the wolves. On the other hand, some believe that FWP is killing all the wolves and we should just leave them alone. Often, there is a misunderstanding or misconception about wolves or wolf management, and once I clear that up with factual information, people tend to be more understanding.

I love this job. I'm able to work outside, hike into the mountains, document wolf activity, and meet all kinds of people.

I grew up in northern Wisconsin in a small agricultural community where my grandparents were dairy farmers. I also came from a family of hunters and wildlife enthusiasts, which helped me learn to strongly value animals.

I earned my bachelor's degree in biology at the University of Montana; volunteered for and worked with FWP and other agencies on wolves, bears, and small mammals; then did private land conservation with the Natural Resource Conservation Service. I really admired FWP's wildlife management vision, so in 2023 I returned to the agency in this position.

Watch a video of Sarah monitoring wolves here.

Photographer **Steven Gnam** was helping the conservation group Swan Valley Connections document rare carnivores in the Swan Valley when their crew spotted wolverine tracks crossing a blowdown over a creek. "I placed a camera trap in a nearby tree with the sensor aimed at the log, hoping the wolverine would keep using it," says Gnam, who lives in Washington. "Winter storms would often blow snow and ice on the front lens element of the custom camera box I made, so every few weeks I would return to wipe snow off the lens and change the batteries." One day in March, his efforts bore fruit when the DSLR camera setup captured a wolverine retracing the path. "I think most of us can relate to not wanting to get our feet wet if we don't have to," Gnam adds. "It's amazing that an animal with water-shedding fur like a wolverine will also avoid an unnecessary soak." ■

50th Anniversary, this year, of the 1975 Montana Natural Streambed Protection Act, which protects rivers from damage due to development.

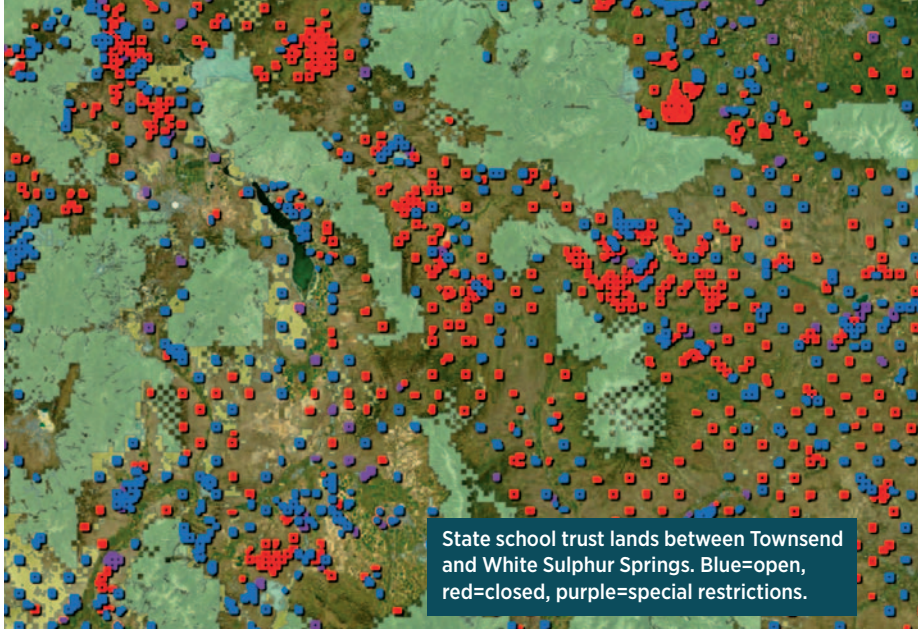
Take a midweek wildlife break

Looking for a weekly Montana natural history fix? Check out FWP's Wildlife Wednesday videos on YouTube. The brief snippets, hosted by education specialist Corie Bowditch, provide fun facts on everything from owl pellets and fish otoliths to tree bark and bear hibernation.

Subscribe to the "MontanaFWP" channel on YouTube, and you'll receive a notice when new videos appear (including the Wildlife Wednesday segment).

To see a list of 100-plus previous Wildlife Wednesdays, scan the QR code at right with your smartphone. ■

Owl-lover Corie Bowditch with a great horned owl.



State school trust lands between Townsend and White Sulphur Springs. Blue=open, red=closed, purple=special restrictions.

PUBLIC ACCESS

New map shows open and closed state trust lands

Scattered across Montana are 5.2 million acres of state school trust lands, most of them open to public hunting, hiking, and other outdoor recreation. Recently the Montana Department of Natural Resources and Conservation (DNRC), which manages the properties, issued a map showing which are open or closed to public use.

The online map includes information on each area's accessibility, public access restrictions, and special scenarios such as if the land is accessible by water only.

State trust lands are parcels granted mostly to western states by Congress in the 19th century for the purpose of funding public schools. States lease the tracts to ranchers, farmers, logging and mining operations, and other businesses to raise revenue, which is put in a "trust" that funds K-12 schools and other educational institutions.

The trust lands are mostly in the central and eastern regions of Montana. Of the 5.2 million-acre total, 1.5 million acres, or 28 percent, are inaccessible to public use, mostly because they are surrounded by private property.

Some state trust lands are marked with small light-blue signs indicating state ownership and recreation access. Crossing private land to reach trust lands without landowner permission is illegal.

As with state parks, wildlife management areas, fishing access sites, and other state lands, visitors need to stay on designated roads, pack out litter, and follow rules and restrictions. And as with other state lands, users need an FWP Conservation License to access school trust lands.

View the map and information about public use of Montana school trust lands at: **dnrc.mt.gov/recreation** ■

CLOCKWISE FROM TOP LEFT: MIKE MORAN ILLUSTRATION; MONTANA FWP; CORIE BOWDITCH

AQUATIC HITCHHIKERS THWARTED

An ongoing effort to stop the spread of aquatic invasive species snared 47 watercraft fouled by zebra and quagga mussels and more than 800 others transporting aquatic weeds before they reached Montana's unspoiled waters in 2024.

FWP's Invasive Species Program recently reported that last year its crews and partners inspected roughly 130,000 watercraft at more than 450 locations statewide, aiming to fend off these small-but-destructive freshwater mollusks that have moved west since arriving in the Great Lakes from Europe in the ballast water of ocean-going ships during the 1980s. Invasive mussels rapidly reproduce to number in the billions. When they die and wash up on shore, they stink up beaches and cover sandy areas in sharp shells. They also clog and damage irrigation pipes and intake valves and can ruin boat and factory motors.

FWP crews also tested more than 3,500 water samples taken at more than 450 locations across

FORAGING

River bottoms ripe for early season yellows

The black "burn" morel mushrooms (*Morchella septimelata* or *M. tomentosa*) that pop up in charred forests the summer after fires are the main draw for many fungus foragers. But another morel crop emerges a bit earlier in the year.

While fire-morel fans are waiting for snow to melt in high-country burn sites, some savvy mushroomers are filling pillow cases with yellow morels (*Monchilla americana*) along river and stream bottoms as early as late April.

Morels emerge when soil temperatures reach 50 to 55 degrees. Low-lying riparian areas warm up before higher-elevation sites. Look for yellow morels (or "blondes") below dead cottonwood and elm trees. Recently dead trees with bark still attached are usually your best bet. Note that yellow morels can be gray, cream, or light tan.

If you're new to morelling, go with someone experienced in identification so you don't end up eating a similar-looking false morel that can make you sick. ■

WILDFLOWER WATCH

PASQUEFLOWER

One of the first wildflowers to emerge in spring is the pasqueflower. Also known as prairie crocus, it grows in dry soils and often pushes up through melting snow, the big buds resembling newborn sparrows. When in bloom, the flower petals can range from pale lavender to dark purple surrounding tightly packed bright yellow stamens. After bloom, the feathery seed heads resemble those of another dry-soil plant: prairie smoke. ■

CLOCKWISE FROM TOP: SHUTTERSTOCK; PAUL HOLDORF; LIZ BRADFORD

the state last year, but found no evidence of invasive plants or animals.

"Much of our success comes from partnerships with tribes, counties, and conservation districts across Montana," says Thomas Woolf, chief of the FWP Invasive Species Bureau.

Invasive mussels and their microscopic larvae, known as veligers, can hitch a ride in the water or wet areas of boats, engines, wading boots, and other gear and infest new reservoirs, lakes, or rivers.

Report suspected infestations at **nas.er.usgs.gov/m/report/.** ■

Likin' Lichen

These strange, beautiful organisms thrive in Montana environments—from prairies and deserts to mountaintops and old-growth forests.

Essay and photos by Tim Wheeler

Brown-eyed wolf lichen
Letharia columbiana

Forked tube lichen
Hypogymnia imshaugii

Broad wrinkle lichen
Tuckermannopsis platyphylla

You've probably noticed them, dangling like pale-green beards above a forest trail, covering boulders with paintlike splashes of reds, browns, and yellows, or colonizing fence posts and urban trees with dabs of orange and green. These bizarre shapes and colors that decorate our world are a group of organisms—actually mini-ecosystems—known as lichens.

Lichens are an extraordinary union between two, and sometimes three, biological kingdoms. A lichen is the specific combination of a fungus, an alga, and the occasional cyanobacterium (blue-green alga), living together in a symbiotic (mutually beneficial) relationship. Together they thrive where the individual parts alone could not.

Imagine your dog, the tulips in your garden, and the mushrooms on your salad joining together to form a new, fully functional organism. That's how wonderful and weird lichens are.

In these unique associations, the fungi provide the housing that supports the algae or cyanobacteria or both. In return, the algae photosynthesize (just like green plants) and provide the fungi with essential sugars. Taking advantage of each partner's abilities, lichens can be found in the most extreme environments, such as sun-baked rocks and exposed vertical cliffs. Although lichens live on almost any substrate in any environment, they reach their greatest diversity on the trees, rocks, and soils of moist forests.

More than 1,200 lichen species have been documented in Montana, appearing in any number of shapes, sizes, and colors. To make identification easier, taxonomists divide lichens into three main groups: foliose (leaflike), fruticose (shrublike), and crustose (crustlike).

Though recent DNA research has revealed these to be artificial groupings—for instance, not all foliose lichens are related—they are still helpful when learning and communicating about different lichen types. ▸▸

Above: Sunken-disc lichen
Aspicilia nashii

Green rock-posy lichen
Rhizoplaca melanophthalma

Sierra rim lichen
Protoparmeliopsis sierrae

Right: Crumpled rock tarpaper lichen
Lathagrium fuscovirens

Lichens play many important ecological roles. They act like sponges, capturing dust and water particles from the air and depositing these nutrients on land. Some even "fix" nitrogen, fertilizing the soil from which they and neighboring plants and trees grow.

Lichens also provide food for mammals and insects. During winter, woodland caribou in British Columbia (and, until the mid-1900s, northwestern Montana) subsist on hair lichens hanging from trees—at times the only food source accessible above the deep snow. Mule deer, white-tailed deer, mountain goats, elk, moose, and even pronghorn munch on various lichens, mostly during winter but also at other times. Mites, springtails, snails, slugs, and many other invertebrate organisms eat lichens. In addition, a wide range of bird and small mammal species that live in trees, like squirrels, use lichens as nesting for insulation, structure, or camouflage.

Perhaps most importantly, lichens are often the first organisms to colonize new habitats. Through both chemical and physical processes, lichens dissolve, crack, and otherwise break down rocks and help jump-start soil development and the resulting pioneer communities. Without lichens, there would be no soil.

People also value lichens. Cultures around the world have harvested them for food, clothing, dyes, perfumes, medicines, poisons, and decorations. And as the images on these pages show, they are often beautiful to look at, as pretty as any flower or butterfly.

Here in Montana, we are blessed with diverse and healthy lichen populations due in part to our clean air and healthy ecosystems. Also, we are at the convergence of the wet Pacific Northwest climate to the west, arid desert ecosystems to the south, mixed-grass prairie to the east, and a subarctic influence traveling down our mountain ranges from the north. What's more, our turbulent geologic history has provided a complex landscape that hosts unique lichen floras.

Though often small and easily overlooked, these fascinating organisms are a significant part of Montana's natural heritage. Now that you know a bit about them and what they look like, keep your eyes peeled the next time you're outdoors to see if you can spot some.

Tim Wheeler is a senior research scientist at the University of Montana's Department of Ecology and Evolution. A version of this essay first appeared in Montana Naturalist *and is reprinted with the permission of the Montana Natural History Center.*

Brown cobblestone lichen

Acarospora fuscata

Sunken-disk lichen

Aspicilia sp.

Gold cobblestone lichen

Pleopsidium flavum

Lobed rim lichen

Protoparmeliopsis muralis

Top left: Fine rockwool lichen
Pseudephebe pubescens

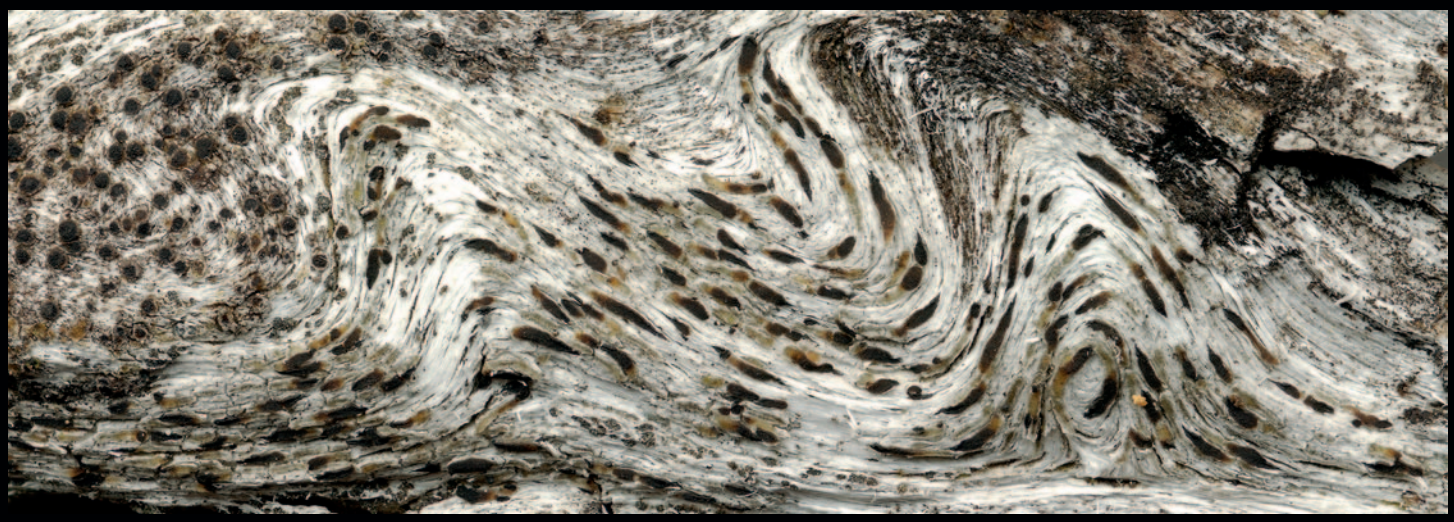
Top right: Granite disc lichen
Lecidea auriculata

Top right: Copper patch lichen
Sporastatia testudinea

Left: Alpine brown sunken disk lichen
Bellemerea alpina

Left: Superficial map lichen
Rhizocarpon superficiale

Below: Parallel woodscript lichen
Xylographa parallela



Above: Tree lungwort
Lobaria pulmonaria

Right: Gray-brown sunken disc lichen
Bellemerea cinereorufescens

Left: Naked firedot lichen
Caloplaca biatorina

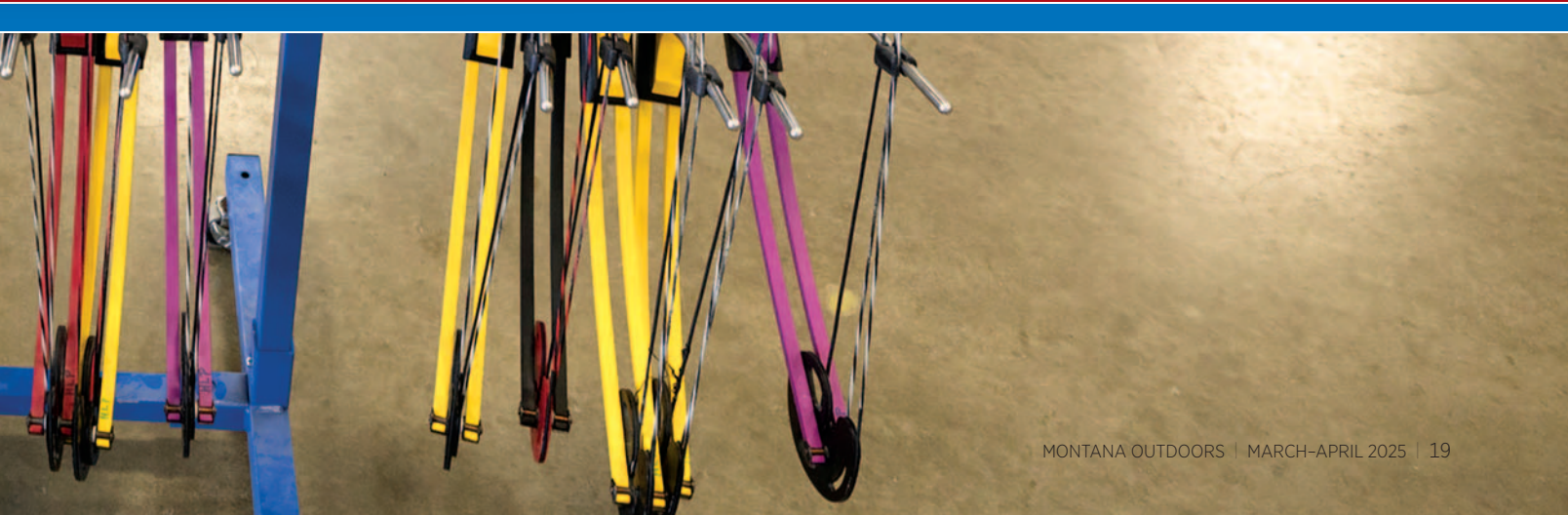
Top: Rock tripe
Umbilicaria phaea

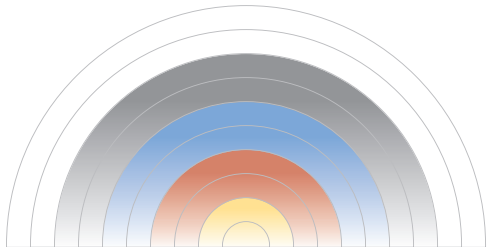
Above: Powder-headed tube lichen
Hypogymnia tubulosa

Hitting the Empowerment

Bull's-Eye

In more than 200 schools across Montana, archery students are building self-confidence, practicing discipline, and enjoying success in competition. BY TOM KUGLIN





The volley of arrows thudded against burlap and foam in rhythmic percussion. Then more thuds echoed throughout the event center at the Lewis and Clark County Fairgrounds after each young archer pulled back a bowstring to anchor, found the mark, and released.

Supportive whistles from family members and teammates reverberated through the crowd, and after an official gave the "All clear!" call, the archers approached the targets to tally their scores. The arrow placement told the story of who won the round, but the scores were far from the ultimate measure of success.

"It's amazing to see the excitement with these kids when they get to try archery, and how it empowers them," says Ryan Schmaltz, Montana Fish, Wildlife & Parks Youth Education Program manager and state coordinator for the National Archery in the Schools Program (NASP).

Hundreds of students from across Montana converged on Helena last March for the 2024 NASP State Tournament. Awarding points for precision on both bull's-eye and 3D targets, the tournament featured competition while celebrating the skills and values that this acclaimed national program helps develop in participants.

"When we talk about society today, there are these huge issues with children with anxiety and pressure from being on social media," Schmaltz says. "But with archery, everything is positive, and the feedback from teachers is that they're seeing kids trying it and having fun. It's active. It's physical. It's the opposite of staring at a smartphone screen all day."

Tom Kuglin, of Helena, is an editor at Bugle, *the Rocky Mountain Elk Foundation magazine.*

BLUEGRASS STATE BEGINNINGS

In 2002, the problem of TikTok-scrolling, Snapchat-loving, sleep-deprived kids obsessed with their smartphones wasn't yet an issue. Even so, educators in Kentucky were looking for ways to improve student attendance, behavior, and focus, and to keep kids engaged in school so they would graduate instead of drop out. At the same time, the Kentucky Department of Fish & Wildlife Resources saw a need to offer young people opportunities to try outdoor activities and inspire them to spend more time in wild places. The two objectives converged with the Kentucky Archery in the Schools Program. First launched in 21 Bluegrass State schools, the program gave students a chance to learn archery techniques and safety under the tutelage of trained instructors.

Kentucky's fledgling archery program quickly caught fire, and the state eclipsed its three-year goal of reaching 120 schools after only one year. Interest from neighboring states soon led to the formation of the educational nonprofit that now manages NASP. Today, the popular program reaches more than 1.3 million students in 9,000 schools in 49 states, nine Canadian provinces, and even New Zealand and the British Virgin Islands.

FWP plays a central role in making NASP a success in Montana. The department provides roughly a dozen teacher training sessions each year to certify instructors. Currently, more than 250 instructors, mostly physical education teachers, run about 200 programs in the state for kids in 4th through 12th grades, through PE classes, after-school and homeschool clubs, and even a few youth correctional facilities. NASP and FWP offer grants and financial assistance that cover roughly two-thirds of equipment costs, and several state parks host shoots or provide space for archery teams.

But it's the teachers and other instructors who "make this program the success that it is," Schmaltz says. NASP instructors get certified in technique and safety, earning state Office of Public Instruction credit. They also secure practice locations and haul teams to the state tournament. "NASP could not happen without them—along with the bus drivers, principals, parents, and everyone else who sees the value of kids learning this sport," Schmaltz says.

Since 2023, FWP has rented the large fairground facility in Helena for the state tournament and helped staff the events to ensure they run smoothly. The annual competition is a qualifier for the western national tournament in Salt Lake City, where top teams and top-10 individuals in elementary, middle school, and high school divisions compete against some of the nation's best school-age archers. Top finishers then go on to "the worlds"—the international championship.

"It's active. It's physical. It's the opposite of staring at a smartphone screen all day."

Beckie Doyle brought a team of 19 shooters, plus coaches, friends, and family members, from tiny Trout Creek to the Montana State Tournament. "Some of these kids overcome a lot in their challenging personal lives to come out and stand here together,"

CLOCKWISE FROM TOP LEFT: THOM BRIDGE; RYAN SCHMALTZ/MONTANA FWP; THOM BRIDGE

THEIR AIM IS TRUE Top left: FWP game warden Bill Dawson assists at the 2024 Montana state NASP tournament by entering scores into an app that tallies and compares results. FWP rents a facility at the Lewis and Clark County Fairgrounds for the tournament and staffs the event. Top right: NASP is great for kids with mobility challenges, like high school sophomore Ethan Jones of Hays, on the Fort Belknap Reservation, who scored a perfect 50 (all five arrows in the 10-point yellow) as a freshman. Below: Guy Rainville of Helena, a range officer and a volunteer at the Montana WILD Education Center in Helena, helps with NASP events.

ARCH(ERY) RIVALS In NASP, students can compete in two events. The bull's-eye shoot (above) is the standard target competition, in which archers shoot five arrows at a target and score 9 to 10 points by hitting the yellow bull's-eye, 7 to 8 for the red circle, 5 to 6 for blue, 3 to 4 for black, and 1 to 2 for white. Below: The other event is the 3D shoot, where competitors aim at life-size foam animals to simulate a hunting situation. Archers shoot at six different animals, which include a wild turkey, coyote, black bear, pronghorn, white-tailed deer, and bighorn sheep—all legal game animals to bowhunt in Montana.

YOUTH SUPPORT
Andy Keller, a ranger at First Peoples Buffalo Jump State Park, enters scores at the state tournament. NASP is a good fit for FWP's education mission of introducing young people to lifelong skills for participating in outdoor activities.

says the education specialist. "Archery is a tool for youth development. Every kid can be successful because they have to learn patience and self-control, and that increases self-esteem. And our community supports them 100 percent."

BUILDING PRIDE

Rod Benson, a science teacher and archery instructor at Hays-Lodgepole High School on the Fort Belknap Reservation, sees NASP as a way to get kids interested in the outdoors. "I thought this'd be a great program for kids who aren't necessarily interested in traditional sports, because it lets them be competitive and represent their school," he says. "Being in Montana, where so many people are into hunting, and here within our Indigenous community, the ability to shoot accurately is a really valued attribute, so this sport can build a lot of pride."

At the 2024 state tournament, Rayah Bordeaux took careful aim at a life-size bighorn sheep target in the 3D competition and watched her arrow drill the 10-point center. A student at Paris Gibson Education Center in Great Falls, she began participating in NASP a year earlier. "I really like just being around the friends I have in archery and having fun," Rayah said. "It's also helped me a lot with things like remembering all the details, like where I aim, shooting positions, and just all the little patterns you have to know."

Paris Gibson coach Dugan Coburn sees many students thrive from both the enjoyment of the sport and the discipline it takes to become a proficient archer. Some participants like the social aspect. Others relish the competition, with goals of shooting well at state and national tournaments. Regardless, everyone gets the chance to shoot and learn, he says.

"I really like that archery is a fun lifetime sport," Coburn says. "And I get kids from all walks of life and every socioeconomic background and kids who've never participated in a school sport or function before. You get them up there, start to give encouragement and positive feedback, and you can just see their confidence building."

Its inclusivity is a big reason NASP is so popular. Equal numbers of male and female students participate, and those shooting in Montana's state tournament come from communities big and small to compete both individually and as a team representing their schools.

"It's so great to go to the tournament and see rural kids and urban kids and everyone in between," says Sara Meloy, FWP Education Bureau chief. "And I also love that NASP allows for the individual excellence that some kids really get into, but at the same time brings kids together working as a team."

Montana abounds in individual excellence. Providing inspiration to all young Montana archers is Billings resident Brady Ellison, who won four world championships and five Olympic medals in the recurve bow category. Recently Bella Nottnagel from Trout Creek was selected as one of 19 student ambassadors for the national NASP. "That's a huge deal for a program that has over a million participants," says Schmaltz. Mavrick Greemore from Twin Bridges, who won the NASP bullseye event in the 2024 Montana state competition, is now ranked number one in the nation in the 4-H Olympic recurve bow division.

JJ Lamb, principal and superintendent of Swan River School, applauds the archery achievements but says that ultimately what NASP teaches kids goes beyond bows, arrows, and scores. "Kids learn that even if they don't always get a bull's-eye or even hit the target, if they keep trying and improving they can hit it the next time," he says. "That's a life skill they can use their entire lives."

The 2025 NASP Montana State Tournament will be held at the Lewis and Clark Country Fairgrounds in Helena March 18-19 and is open to the public.

NATIONAL SURVEY SAYS **KIDS BENEFIT FROM NASP**

In 2024, the national NASP program surveyed more than 7,500 student participants nationwide. Some survey results:

- **91%** said they liked archery
- **34%** said they feel more confident in other areas of their life
- **68%** said they feel more connected to their school
- **53%** feel proud of their archery skills
- **34%** said they work harder in the classroom
- **41%** said archery brings them peace and contentment

NASP National Archery in the Schools Program

CLOCKWISE FROM TOP LEFT: RYAN SCHMALTZ/MONTANA FWP; THOM BRIDGE; THOM BRIDGE

RECONSTRUCTING THE REGULATIONS

Every two years, FWP and the Montana Fish and Wildlife Commission combine public opinion and scientific data to adjust seasons, harvest quotas, and other components of the hunting regulations booklets.

By Brian Wakeling. Illustrations by Ed Jenne

Ever wonder how Montana Fish, Wildlife & Parks comes up with the changes that are made to the hunting regulations? Some hunters think the deliberations are secretly made in dark back rooms, with wildlife biologists and game wardens huddled over the regulations booklets, striking out regulations they don't like and adding ones they do. But that's not how it works.

In fact, the process of revising the hunting regulations every two years is open and transparent. And it involves not only FWP staff but also the Montana Fish and Wildlife Commission and, most importantly, any members of the public who want to participate.

TRANSPARENCY

As a government agency, FWP is required to use a transparent process that includes public input and involvement. But the department actually goes beyond what is required, by providing multiple meetings and methods throughout the process for the public to share their thoughts. Those of us working for FWP believe that hunters and anyone else interested in wildlife management in Montana deserve to see what we're doing and have a say. Also, we convert many ideas garnered from public input into recommendations for the Fish and Wildlife Commission.

Montana uses a "biennial" season-setting process, meaning we bring our season structure recommendations to the commission in December of odd-numbered years, like 2025. (Exceptions are furbearer and wolf seasons, which are set each year.) The role of the governor-appointed commission members is to represent the public in decisions about FWP proposals and recommendations.

Once approved, seasons and regulations remain largely unchanged for two years. By confirming the seasons, quotas, and other regulations in December, FWP can print the regulations booklets in time for hunters to review tag quotas, drawing statistics from the previous season, and other information before they apply for deer and elk permits beginning in April.

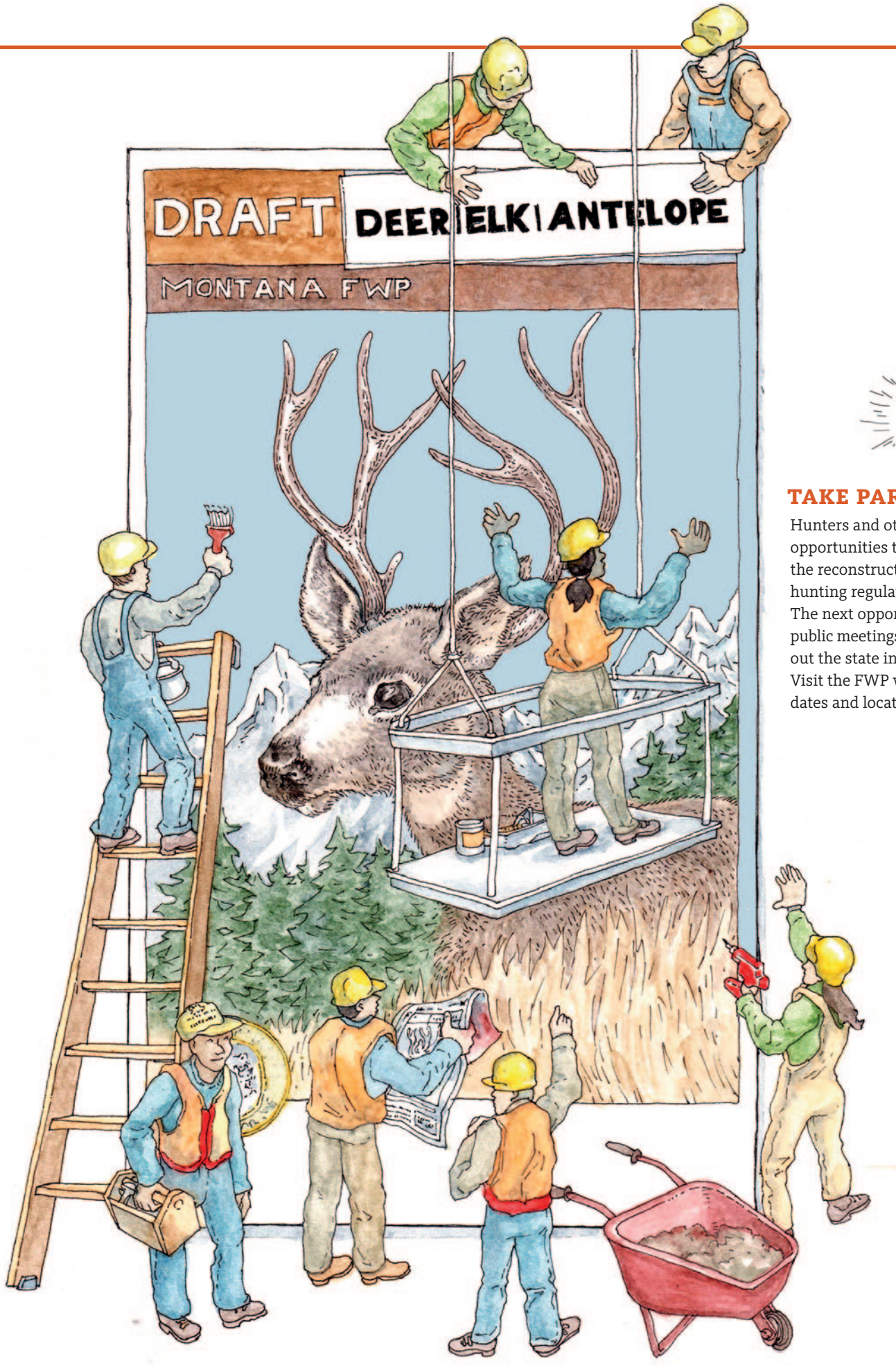
HARVESTING IDEAS

The season-setting process actually begins much earlier than December of odd-numbered years. In fact, shortly after the ink is dry on each new set of regulations, hunters and others start calling wildlife biologists and managers to tell them which changes they like—or don't. Throughout the year, citizen advisory committees and other formal working groups, interagency committees, organized groups of hunters, and other interested organizations meet to discuss Montana's wildlife management, hunting seasons, and regulations. At these meetings, agency biologists and other FWP staff hear of new ideas that may influence our notions of how to provide better hunter opportunities while limiting crop and hay depredation from elk and deer on private land and fulfilling our other management responsibilities.

FACT CHECKING

We take all this public input and compare it to yearly game population and hunter harvest surveys to see if public perceptions are supported by science. For example, if someone contends that a new hunt structure in a mule

Brian Wakeling is the chief of FWP's Game Management Bureau. Ed Jenne is an illustrator in Missoula.



TAKE PART!

Hunters and others have several opportunities to contribute to the reconstruction of Montana's hunting regulations each biennium. The next opportunity will be the public meetings FWP holds throughout the state in June and July 2025. Visit the FWP website in May for dates and locations.

deer hunting district is harming population recovery due to overharvest, we can check data from hunter check stations and aerial wildlife abundance surveys to look for trends.

Reality checks to validate opinions are important. Often public perceptions turn out to be correct, but sometimes they don't. We want to be sure.

In addition, FWP collaborates with other agencies, wildlife conservation organizations, and universities to study wildlife populations. Information gleaned from these partnerships helps establish "biological sideboards"—the scientific limits of proposed regulation changes. We use these sideboards when formulating recommendations.

All this is what I call the "harvesting ideas" part of the process. We gather good ideas from the public that may make hunting seasons and regulations more effective, more fair, or otherwise better, and use our biological data to see if proposals are scientifically supportable. After a year of harvesting ideas, a team of FWP wildlife biologists and managers winnows them down to concepts we believe are worth considering, generally around April of odd-numbered years (such as this coming April).

"WHAT DO YOU THINK?"

Once we formulate potential regulation changes, we hold open meetings in June and July at FWP regional offices across the state to gather public feedback. Nothing is official at this point; we just want to know what people think. We also may do random surveys of various hunter groups most affected by proposals to see if they support the concepts under consideration. During this time, we may learn of new ideas we hadn't considered that may be worth discussing further.

We encourage anyone who is interested in any aspect of Montana's hunting seasons and regulations to attend these meetings and let us know what they think. We really do want to know.

The next step is for the FWP regulations team to discuss what we heard at the public meetings. For instance, was there general support for a proposed change in a bighorn sheep season? Did local hunters like a proposed new cow elk quota? At this point, we may drop unpopular ideas from further consideration unless we believe them to be biologically necessary.

Next, the team meets with FWP senior managers to determine which ideas the department wants to turn into official proposals to put before the commission. The senior managers assess the merits of the proposals, the degree of public support, consistency with previous commission or legislative direction, and the feasibility of carrying out the proposals.

THE COMMISSION DECIDES

Then we are ready for the third phase, during which we post our official proposals plus adjustments to permits and quota ranges on the commission page of the FWP website. This

Two Years in the Making Montana Biennial Hunting Regulations Timeline

Regulations booklets are formatted, printed, and distributed.

Conservation groups, hunting clubs, advisory committees, and others meet to discuss regulations and quotas for the next biennium.

FWP regularly meets with other agencies and universities to discuss scientific findings that provide "biological sideboards" to proposals.

FWP biologists gather information about harvests at hunter check stations.

DECEMBER | JANUARY | FEBRUARY | MARCH | APRIL | MAY | JUNE | JULY | AUGUST | SEPTEMBER | OCTOBER | NOVEMBER | DECEMBER

Hunters use booklets to apply for deer and elk permits.

During this even-numbered year (2024), FWP "harvests" ideas for potential changes to seasons, quotas, and regulations.

Fish and Wildlife Commission meets to make final decisions on 2024-25 seasons.

From late winter through the summer, FWP biologists conduct aerial surveys to estimate deer, elk, moose, and pronghorn populations.

Hunters use regulations booklets to check seasons, quotas, hunting districts, rules, and regulations governing Montana hunting.

2023 | 2024

generally happens in late October. In November, we host additional public meetings (online and in person), at which individuals can ask questions about the proposals to better understand the rationale behind each one. At this time, people may also submit written comments about proposals on the commission web page. All comments are provided verbatim to commissioners for their review and consideration before they meet to make decisions.

Note that throughout the year, commission members have been hearing from hunters and others in their respective districts. This is another way the public makes their voices heard.

Finally, the regulations team appears before the commission in Helena in December, and the commissioners decide which recommendations to approve, dismiss, or amend after taking even more public comment during the meeting.

To prevent backroom decisionmaking, state law forbids commission members from discussing proposals with a quorum of other members before the December meeting. Discussions have to take place in the open, during the meeting. Sometimes this results in a meeting that is a bit disorganized, but

that's the nature of any group discussing proposals for the first time.

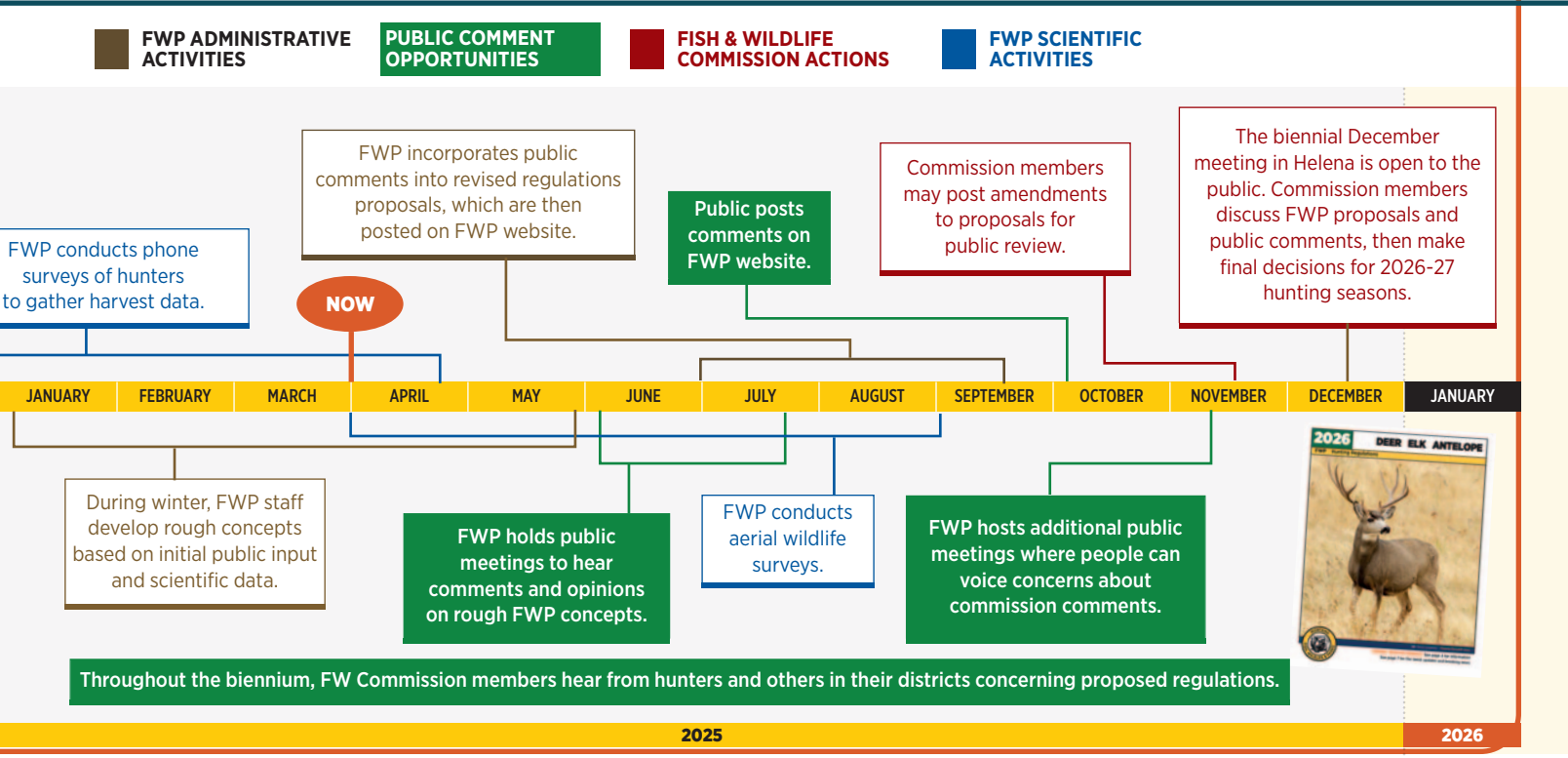
Before the December meeting begins, individual commissioners may offer an amendment to a proposal. Amendments are posted on the FWP website along with the department's response. Sometimes the department's regulations team members will comment that an amendment is biologically sound, while other times they may note that an amendment is not supported by the department's scientific findings.

Offering an amendment is a way for commissioners to indicate to the public and other commissioners that they are considering a change to the department's recommendation while allowing the public time to respond to the idea. Some amendments are offered before the December meeting, and some are offered during the meeting. If an amendment is offered at the meeting, only the members of the public attending the meeting in person or who have registered online have the opportunity to provide comment.

Once commission members consider the various proposals and craft their final motion, they listen to public comment voiced at the December meeting, at FWP regional offices streaming the meeting live, and online through a web link. This provides commissioners one final opportunity to consider public concerns before they take final action on proposed changes to regulations.

The commission's final decisions are then typed up and incorporated into the hunting regulations booklets, which are printed and shipped across the state to FWP and commercial outlets, and posted on our website.

FWP staff and members of the Fish and Wildlife Commission hope that by better understanding the process through which the department develops and the commission adopts hunting recommendations, more people will show up at meetings, comment online, and otherwise engage with us. Individuals truly can influence the outcome of these decisions. But they need to participate in the process to be heard.


FWP ADMINISTRATIVE ACTIVITIES
PUBLIC COMMENT OPPORTUNITIES
FISH & WILDLIFE COMMISSION ACTIONS
FWP SCIENTIFIC ACTIVITIES
FWP incorporates public comments into revised regulations proposals, which are then posted on FWP website.
Public posts comments on FWP website.
Commission members may post amendments to proposals for public review.
The biennial December meeting in Helena is open to the public. Commission members discuss FWP proposals and public comments, then make final decisions for 2026-27 hunting seasons.
FWP conducts phone surveys of hunters to gather harvest data.
NOW
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
JANUARY
During winter, FWP staff develop rough concepts based on initial public input and scientific data.
FWP holds public meetings to hear comments and opinions on rough FWP concepts.
FWP conducts aerial wildlife surveys.
FWP hosts additional public meetings where people can voice concerns about commission comments.
2026
DEER ELK ANTELOPE
Throughout the biennium, FW Commission members hear from hunters and others in their districts concerning proposed regulations.
2025
2026

GOOD ENOUGH GUIDE

WHO'S WHO?

The "good enough" guide to identifying Montana's 15 owl species

BY ELLEN HOROWITZ

In the dawn light of midwinter, a small bird lands atop a spindly spruce. At first glance the rotund form appears headless, until I peer through binoculars and see the shoulder-width head and big eyes of a northern pygmy-owl staring back. It's easy to forget how little these owls are.

Northern pygmy-owl
PHOTO BY KYLE C. MOON

"WHO, ME?" A long-eared owl rests on a mountain ash near Whitefish. These year-round residents roost in thicktets during the day then hunt at night.

ROBERT HANSON

EYES
Large, forward-facing eyes provide great depth perception for hunting during day and night.
BEAK
Short and hooked for tearing flesh.
WINGS
Comblike structures on the feather tips allow for silent flight.
PLUMAGE
Soft, thick.
FEET
Covered in feathers for insulation.
TALONS
Sharp for grabbing and killing prey.
NECK
Adapted for a large turning radius for following moving prey.
FACE
Disk shape directs sound to the ears.
TUFTS
Found on some species, these are feathers, not ears.
Owl basics

SMALL AS A POP CAN

Owls rank among the most readily identified birds in the world due to their characteristic large heads with big, forward-facing eyes and stocky bodies. Yet the feathered gnome I spotted that February morning caught me by surprise. Because most owls are medium to large birds, it's easy to overlook one that's just a little taller than a pop can.

Though, as a group, owls are fairly easy to identify, my mistake that winter morning is a reminder that individual species by no means look or behave the same. Misconceptions about these raptors abound. For instance, not all owls emerge from their roosting spots from dusk to dawn; some, like the northern pygmy-owl, hunt during the day. And not all owls hoot: Some toot, whistle, gurgle, caw, cackle, shriek, coo, or even whinny.

What most owl species have in common is that females do all the incubating after laying eggs in (typically) nests made by other birds. Nine Montana species nest in tree cavities. Broken-top snags provide nest sites for others. Some use abandoned stick nests made by hawks, magpies, crows, or ravens. Several owl species use human-made structures including nest boxes. One nests on the ground, and another lays its eggs below ground in deserted animal burrows.

Most owls hunt and consume small mammals, particularly voles and mice—except for the insect-eating flammulated owl.

Of the 19 species of owls found in Canada and the United States, Montana has 15. Of those, 14 species nest here—more than any other state or province. But that doesn't make them any easier to find.

"Owls are reclusive, and their coloration and behavior help them hide," says owl expert Denver Holt, founder and president of the Owl Research Institute in Charlo. Cryptic coloring allows these camouflage wizards to blend into their background—especially when sitting snugged against a tree trunk or screened by branches. Owls also perform shape-shifting acts such as contracting feathers to make themselves look tall and thin or drawing a wing across their body, making them difficult to spot.

LISTEN UP

Fortunately, owls aren't all that hard to hear. And according to Holt, late winter through early spring is the best time to hear them vocalize because it's the start of the breeding season for most owl species in Montana. But it's a narrow window of opportunity, Holt adds, because "once the females start laying eggs, most owls quiet down."

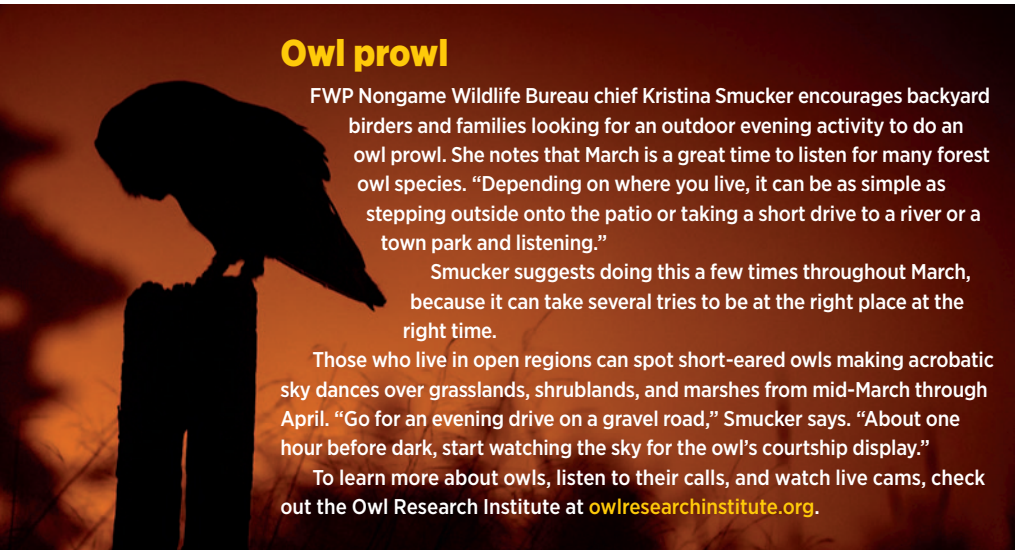
It also helps to learn which habitats different species prefer, advises Kristina Smucker, chief of the Montana Fish, Wildlife & Parks Nongame Wildlife Bureau. For instance, if you are on a prairie and an owl flies up out of the grass, it's probably a short-eared owl. Anywhere in Glacier National Park near a recent burn is a good spot to scan the tops of tall trees and snags for northern hawk-owls, an elusive mid-size owl with a long hawklike tail.

Along with vocalizations and habitat preferences, Holt urges beginners to learn to identify owls by their physical traits, such as noting whether they have tufts (feathers that stick up like "ears" or "horns") or a round head. The following guide is organized accordingly, with owls listed from smallest to largest in each category.

It won't make you an owl expert, but like other *Montana Outdoors* bird guides, it will at least give you a "good enough" idea of what you are looking at. ▶▶

Ellen Horowitz is a naturalist, outdoors educator, and a longtime contributor to Montana Outdoors. *She lives in Columbia Falls.*

FROM LEFT: KEVIN LEAGUE; SHUTTERSTOCK; SHUTTERSTOCK



Owl prowl

FWP Nongame Wildlife Bureau chief Kristina Smucker encourages backyard birders and families looking for an outdoor evening activity to do an owl prowl. She notes that March is a great time to listen for many forest owl species. "Depending on where you live, it can be as simple as stepping outside onto the patio or taking a short drive to a river or a town park and listening."

Smucker suggests doing this a few times throughout March, because it can take several tries to be at the right place at the right time.

Those who live in open regions can spot short-eared owls making acrobatic sky dances over grasslands, shrublands, and marshes from mid-March through April. "Go for an evening drive on a gravel road," Smucker says. "About one hour before dark, start watching the sky for the owl's courtship display."

To learn more about owls, listen to their calls, and watch live cams, check out the Owl Research Institute at owlresearchinstitute.org.

TUFTED OWLS (note that the flammuted and western screech owls often do not show their tufts.)

FLAMMULATED OWL

Height: 5–6 inches (Montana's smallest)

▶ **Interesting facts:** The low-pitch hoots of this tiny owl resemble the sounds produced by a much larger owl.

Where: Low- to mid-elevation old-growth stands of ponderosa pine and Douglas fir in the western third of Montana.

When: Migratory. Seasonal breeding residents. Arrive in Montana around May and leave by late September for wintering grounds in Mexico and parts of Central America.

Habits: Nocturnal. Nest in large dead trees with natural cavities or those carved by woodpeckers. Diet is almost entirely insects: moths, beetles, crickets, and grasshoppers. Breeding season begins around late May to June.

WESTERN SCREECH OWL

Height: 8–10 inches

▶ **Interesting facts:** Distinctive vocalizations resemble whistled hoots that get faster and faster in a "bouncing ball" tempo.

Where: Riparian (riverside) woodlands of cottonwoods and willows; mixed-conifer forests and aspens; and wooded residential neighborhoods and city parks in the western third of Montana.

When: Year-round residents. Nesting begins about late March.

Habits: Nocturnal. Nest in natural tree cavities and those carved by woodpeckers. These owls often perch at roost holes or on branches and then tuck themselves against a tree trunk for camouflage.

EASTERN SCREECH OWL

Height: 8–10 inches

▶ **Interesting facts:** Eastern to central Montana is believed to be the western extent of this species' range in the U.S. Birds found in Montana are lighter than screech owls found farther east. These birds vocalize at dusk and throughout the night with sounds that include soft haunting trills, hoots, descending whinnies, barks, and screeches.

Where: Riparian areas with large cottonwood trees, forested city parks, and residential areas of Montana's eastern two-thirds.

When: Year-round residents. Nesting begins in March.

Habits: Nocturnal. Nest in natural tree cavities and those made by northern flickers.

CLOCKWISE FROM TOP LEFT: JESSE LEE VARNADO; KEN ARCHER; SHAWN STEWART; SHUTTERSTOCK; DONALD M. JONES; SHUTTERSTOCK

ROUND-HEADED OWLS

LONG-EARED OWL

Height: 14–16 inches

▶ **Interesting facts:** These birds roost communally in autumn and winter. As many as 100 long-eared owls have been reported occupying one roost, although 2 to 20 is average. Based on breeding bird surveys, populations declined by 91 percent in the U.S. and Canada from 1970 to 2014, likely due to habitat loss.

Where: Dense vegetation such as shelter belts and juniper thickets statewide.

When: Year-round residents. Nesting begins in March or April.

Habits: Nocturnal. Roost in thickets or along forest edges by day and hunt open country by night. Nest in abandoned stick nests made by magpies, crows, and hawks.

GREAT HORNED OWL

Height: 20–24 inches

▶ **Interesting facts:** Dubbed "winged tigers" by 19th-century naturalist Ernest Thompson Seton. Prey consists mostly of small mammals but can include frogs, snakes, ducks, herons, and even other raptors. This is one of the largest owls in North America with ear tufts.

Where: River bottoms, deciduous and coniferous forests including suburban woodlots, urban parks, grasslands, and agricultural areas statewide.

When: Nocturnal, active from dusk (or late afternoon, in winter) to dawn. Year-round residents. Nesting begins in February.

Habits: These owls call year-round, but courtship begins earlier than other owls (December and January). They nest in abandoned stick nests, broken-topped trees, large natural tree cavities, cliff cavities, and abandoned buildings.

NORTHERN PYGMY-OWL

Height: 6–7 inches (Montana's second-smallest owl)

▶ **Interesting facts:** "Eye spot" markings on the back of the head are thought by researchers to confuse predators and mobbing songbirds that might otherwise attack them. Research in Montana suggests that females begin incubation only after all the eggs are laid, which is rare among owls.

Where: Mountain coniferous or mixed-conifer-deciduous forests, cottonwood bottomlands, and burned forests in the western third of Montana.

When: Active from dawn to dusk. Year-round residents. Breeding begins in April.

Habits: Nest in snags with natural holes or woodpecker cavities. Their "toot" call—similar to that of the saw-whet owl with a slower pace—is often heard in fall, winter, and spring.

CLOCKWISE FROM TOP LEFT: TIM RUBBERT; LEAH FRYE; ERIN BRAATEN; SHAWN STEWART; CHRISTOPHER JOHNSON; SHUTTERSTOCK

ROUND-HEADED OWLS (continued)

NORTHERN SAW-WHET OWL

Height: 7–8 inches

▶ **Interesting facts:** The male's distinctive call is heard from late winter to early spring. The repetitive series of "toots" resembles the sound of a garbage truck backing up. Also, these owls store uneaten prey on branches, and in winter they will sit on their frozen meal to thaw it before consumption.

Where: Range from cottonwood bottomlands at 3,000 feet to subalpine forests at 7,000 feet in the state's western half and southern third.

When: Nocturnal. Some are year-round residents while others are considered migratory or nomadic, flying south from northern latitudes or moving from higher to lower elevations. Nesting begins in April.

Habits: Nest in trees in woodpecker cavities or in nest boxes. Roost in dense cover among thickets and conifer branches.

BURROWING OWL

Height: 9–10 inches

▶ **Interesting facts:** When disturbed in their burrow, these owls imitate the sound of a rattlesnake to scare away potential predators. During fall migration to central Mexico, they fly 100 to 200 miles per night with an average speed of 30 mph.

Where: Open country including grasslands and shrublands with low vegetation and a clear line of sight to spot prey and predators. In Montana, these owls live in the same areas as black-tailed prairie dogs. Breeding residents are mainly east of the Continental Divide.

When: Early morning and late evening. They migrate south in mid-September to early October and return in early to mid-April. Nesting begins around mid-May.

Habits: Nest in burrows made by prairie dogs, badgers, or ground squirrels. They often perch on fence posts or near burrow entrances. They prey on insects and small mammals.

BOREAL OWL

Height: 8–11 inches

▶ **Interesting facts:** Like other nocturnal owls, boreal owls have asymmetrical ears, which help them locate prey. They swivel their head from side to side until the sound (of scurrying mouse feet, for example) is heard by both ears simultaneously and the owl can pinpoint the prey's exact location.

Where: Year-round residents. Found in the western half of the state in mature subalpine forests above 5,200 feet.

When: Nocturnal. Peak of mating occurs in late winter and early spring at high elevations. Begins nesting around late March.

Habits: Nest in tree cavities constructed by northern flickers and pileated woodpeckers. Also use nest boxes.

CLOCKWISE FROM TOP LEFT: DEA VOGEL; LAURA VERHAEGHE; SHUTTERSTOCK; SHUTTERSTOCK; DONALD M. JONES; DICK WALKER

ROUND-HEADED OWLS

SHORT-EARED OWL

Height: 14–15 inches

▶ **Interesting facts:** Like killdeer, these owls perform a "broken-wing act" to draw predators away from their eggs or chicks.

Where: Open country including grasslands, plains, and some agricultural areas. Year-round residents found throughout the state.

When: Active day and night. Nesting begins around April.

Habits: Nest and roost on the ground in places where grasses are tall enough to conceal them. Their flight pattern is fluttery or bouncy, and birds may hover before dropping down for a kill. Males perform an aerial courtship ritual known as sky dancing.

NORTHERN HAWK OWL

Height: 14–15 inches

▶ **Interesting facts:** Hawk owls resemble hawks with their long tail, flight pattern, ability to hover, and habit of perching atop tall trees in search of prey. Recently burned forests are thought to be critical for nesting.

Where: Open coniferous or coniferous-deciduous forests and recently burned forests. Year-round residents found in and around Glacier National Park.

When: Primarily daytime. Nesting begins as early as March.

Habits: Nest in natural cavities, broken-topped trees, and sometimes abandoned crow and raptor nests.

BARN OWL

Height: 13–16 inches

▶ **Interesting facts:** Studies show that barn owl plumage lacks adequate insulation for long, cold periods. The birds may die of starvation during extreme winter weather.

Where: Open country especially around agricultural areas; considered an occasional year-round resident in parts of western and southern Montana.

When: Nocturnal. Nesting begins as early as mid-February.

Habits: Nest and roost in tree cavities as well as sheltered sites in cliffs, riverbanks, and rock outcrops. Also use abandoned nests of other birds and human-made structures (nest boxes, haystacks, barns, and abandoned buildings).

CLOCKWISE FROM TOP LEFT: RANDY SMITH; DONALD M. JONES; SHUTTERSTOCK; SHUTTERSTOCK; LEAH FRYE; ESTELLE SHUTTLEWORTH

ROUND-HEADED OWLS (continued)

BARRED OWL

Height: 18–20 inches

▶ **Interesting facts:** Throughout the year, both males and females vocalize a nine-note hooting sequence resembling the sound, "Who cooks for you, who cooks for you-all." During courtship, they produce an eerie cry that sounds like jungle monkeys.

Where: Mature coniferous and mixed coniferous-deciduous forests. Year-round residents found in the western third of the state.

When: Nocturnal.

Habits: Nest in natural tree cavities, broken-topped snags, and abandoned stick nests built by crows and hawks. Nesting begins around late March.

SNOWY OWL

Height: 21–26 inches

▶ **Interesting facts:** Easily recognized by its white plumage and large size. Western Montana occasionally has snowy owl "irruptions," which occur when large numbers fly down from Canada in winter. In the winter of 2005-06, at least 42 owls were observed near Polson and more than 30 roosted communally.

Where: Grasslands, agricultural fields, and pastures.

When: Daytime owls that visit statewide in winter.

Habits: In winter, snowy owls feed on whatever prey is most abundant, from voles and mice to ducks and snowshoe hares. They do not breed in Montana.

GREAT GRAY OWL

Height: 24–33 inches

▶ **Interesting facts:** North America's largest owl by length, but weighs only about 2 pounds (less than snowy or great horned owls). Super-sensitive hearing allows them to detect small rodents beneath more than 16 inches of snow.

Where: Open coniferous and mixed coniferous forests near meadows. Uncommon year-round residents in the western half of the state.

When: Active day and night.

Habits: Nest in large-diameter broken-topped snags and abandoned hawk or raven nests. Nesting begins in March or April.

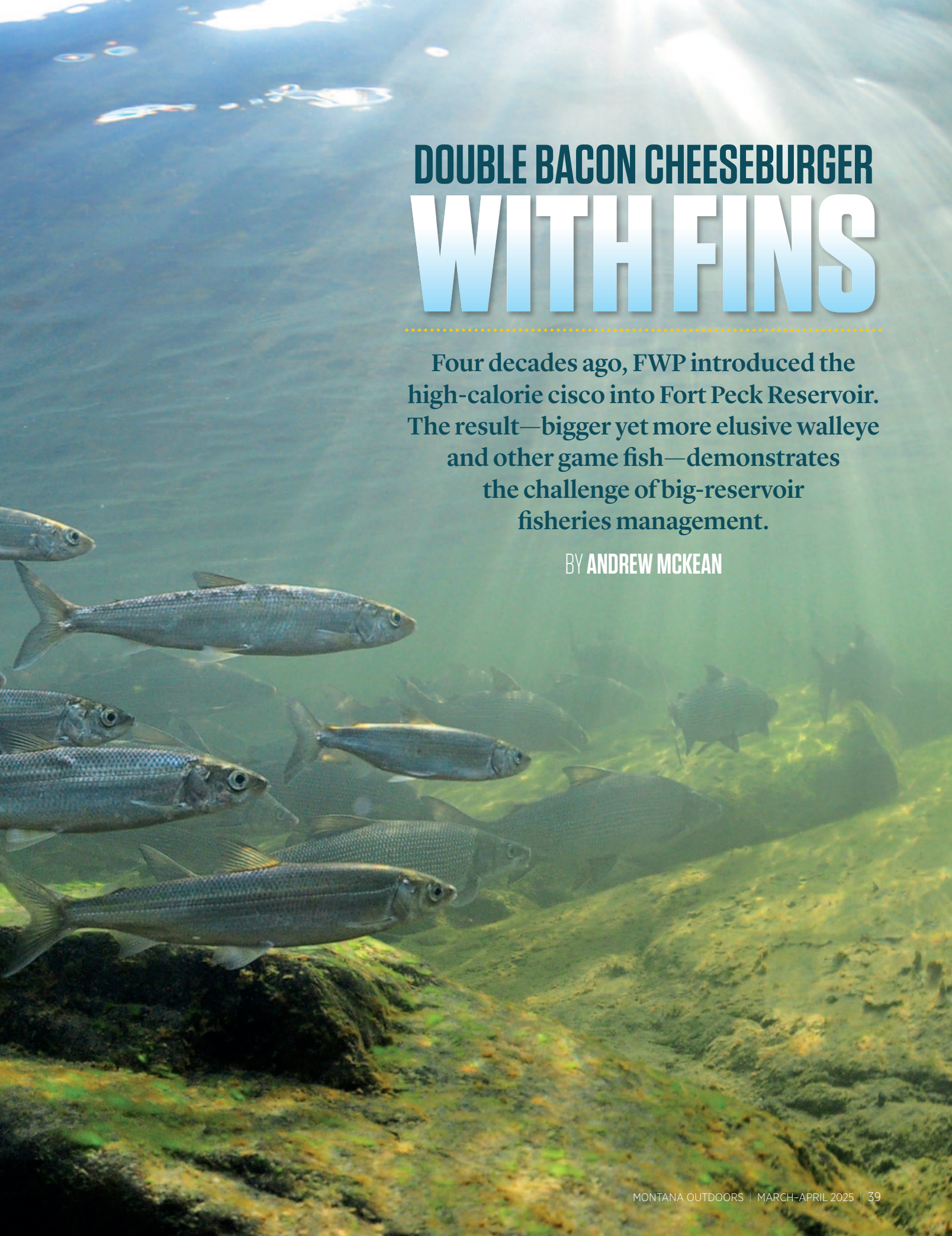
CLOCKWISE FROM TOP LEFT: MARK BOESCH; GARY KRAMER; RANDY BEACHAM; MATTHEW BERTELLOTTI; ERIN BRAATEN; ELIZABETH MOORE

SNAGGING A GREAT NEST SITE
A great gray owl with its chicks in a nest made in a broken treetop. Cavities and broken tops in dead or dying trees are where most Montana owl species nest.

DONALD M. JONES

DEEP DINING A school of cisco sits near the bottom of Fort Peck Reservoir. The oily forage fish—a relative of trout and salmon—have fattened up the reservoir's walleye and other game species but also drawn the big fish to deep water where anglers struggle to find and catch them.

PHOTO BY PAUL VECSEI/ENGBRETSON UNDERWATER PHOTOGRAPHY



DOUBLE BACON CHEESEBURGER WITH FINS

Four decades ago, FWP introduced the high-calorie cisco into Fort Peck Reservoir. The result—bigger yet more elusive walleye and other game fish—demonstrates the challenge of big-reservoir fisheries management.

BY **ANDREW MCKEAN**

DOWN THERE SOMEWHERE One of the challenges of fishing Fort Peck is finding the reservoir's huge game fish, which in summer follow cisco as deep as 100 feet.

Fort Peck Reservoir doesn't look like a feedlot, but beneath its wind-capped waters is a food cycle that's every bit as managed as a Nebraska cattle-fattening operation.

In the case of Fort Peck, Montana's largest and most-fished water body, it's not corn or silage that's being served to walleye, lake trout, and Chinook salmon but rather a big-eyed silver forage fish that was introduced to the prairie reservoir in 1984. It's the cisco, a member of the salmonid family sometimes called lake herring or tullibee.

With the exception of reservoir water levels, nothing affects Fort Peck's sport fisheries more than cisco. The high-calorie species—essentially a double bacon cheeseburger with fins—fattens game fish and is responsible for many of the wall-hangers pulled from the reservoir each year.

Yet cisco also have the unintended effect of luring the larger walleye into deeper, colder water far from the shoreline where anglers might otherwise catch them without needing a boat. Because of Fort Peck's massive size, walleye that disappear into its depths are hard to find and catch. (Lake trout and salmon stay in deep water no matter what species of forage fish they eat.)

SUCCESS STORY From 1984 to 1986, Montana planted cisco, a Great Lakes salmonid, into Fort Peck Reservoir with the aim of fattening game species. It took a while, but it worked.

The outsize effect of cisco continually impresses Heath Headley, the FWP fisheries biologist in charge of managing Fort Peck Reservoir.

"They are a give-and-take species," he says. "On the one hand, they've provided a consistent, reliable, and extremely utilized forage base for game fish, and I'd argue they've exceeded everyone's expectations. On the other hand, they've changed fishing, and I think walleye anglers especially are still trying to figure out how to find, pattern, and catch suspended open-water fish."

WATER LEVELS RISE AND FALL

To appreciate how the introduction of this forage fish four decades ago changed Fort Peck, it's useful to look back at what the reservoir's fishery was like before that.

After Fort Peck Dam was completed in 1940 and the 130-mile-long reservoir began filling, Montana fisheries crews "threw whatever species they could get" into the rising water, says Steve Dalbey, recently retired regional fisheries manager in Glasgow. "On

Andrew McKean is the hunting editor for Outdoor Life *and a frequent contributor to* Montana Outdoors. *He lives on a ranch outside of Glasgow.*

CHUCK HANEY; ILLUSTRATION BY JOSEPH TOMELLERI

top of the native species that were trapped in the reservoir, FWP planted hatchery-raised rainbow trout, bullheads, largemouth bass, northern pike, and eventually walleye."

The eclectic fishery constantly changed. In years of abundant rain and snow to the west, when the reservoir's water levels rose and flooded shoreline grasses and shrubs, predators such as northern pike and walleye would cruise the shallows gorging on forage fish—mainly young-of-the-year perch, crappie, spottail shiners, and emerald shiners—that hid in submerged vegetation where they had hatched from eggs in spring. But during drought years when water levels dropped, there was little shoreline vegetation to produce or protect forage fish, and predatory species would grow skinny and die off—until a few years later when rising waters again covered weeds and willows along the shoreline and created good forage fish habitat.

Fisheries managers couldn't control water levels—that is still up to Mother Nature and the U.S. Army Corps of Engineers—so in the 1970s and early '80s they looked for other ways to help game fish. One idea was to add new forage fish that would fatten up the predator species that anglers so love to catch.

This was a high-stakes proposition. FWP biologists knew that introducing a non-native species could provide long-term benefits but also cause lasting harm. The history of manipulating natural systems is full of examples of bioengineering gone wrong. On the benches above Fort Peck, crested wheatgrass planted a century ago for its supposed beneficial uses is now officially designated as an invasive weed. *Mysis* shrimp introduced into the Flathead Lake watershed ended up crashing the lake's popular kokanee salmon population. Lake trout illegally planted in Yellowstone Lake devastated the world-class cutthroat trout population there.

"They definitely didn't want to jeopardize the Fort Peck fishery or fish populations upstream or downstream of the dam," Headley says of the biologists nearly half a century ago who pondered which forage fish to introduce.

One option was the rainbow smelt. Downstream on the Missouri River, biologists in both Dakotas had planted this non-native smelt as forage for walleye in Sacajawea and Oahe reservoirs. But things didn't work out as planned. Because smelt are short-lived spring spawners, their production was limited by reservoir levels. High water produced lots of smelt and fat, abundant walleye. But low water meant few smelt and walleye that looked like hammer handles.

"After extensive review and consultation with personnel from other wildlife agencies, FWP fisheries staff determined cisco might be the best fit for the fishery," Headley wrote in a 40th anniversary review of the cisco's introduction. The source would be Saskatchewan, where cisco are native.

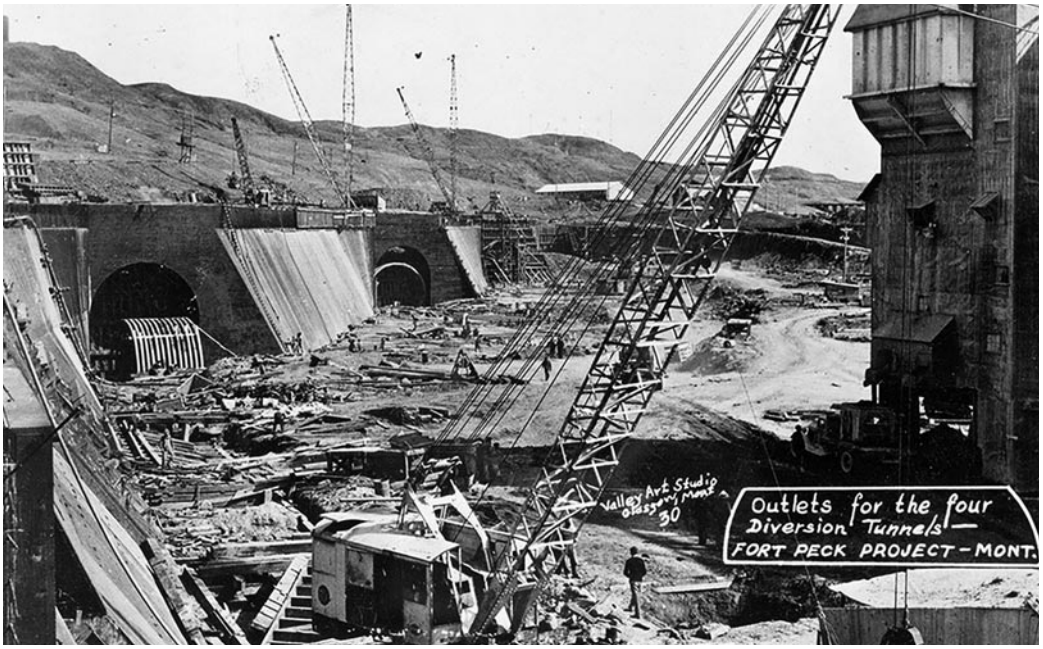
"Approximately 8 million cisco fry were introduced into Fort Peck Reservoir in 1984," Headley wrote. "Stocking efforts were continued in 1985 and 1986 with 32 million fry and 60,000 fingerlings released in hopes of further establishing a population. Since then, no stocking of cisco has occurred, and the population has been self-sustaining."

Montana fisheries managers had found and filled a rare vacant ecological niche. Now they had to wait and see if they also created any unforeseen problems.

HOPING FOR EARLY ICE

FWP staff and Fort Peck anglers have had a lot to learn about cisco. First, fisheries managers had to decode the species' life cycle. The fish gather in late fall along shorelines to broadcast their eggs on gravel just before the surface ices over. Ideally, cisco fry hatch as spring sunlight melts the ice and sprouts a galaxy of microscopic organisms called zooplankton. As do the adults, the tiny cisco eat the plankton, while newly hatched walleye, smallmouth bass, and northern pike move to shallow shorelines to eat the little cisco.

When warm winter weather delays ice-up until late January or February, something that is happening more frequently in recent



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MAKING AN INLAND SEA

Completed in 1940, Fort Peck Dam was built mainly to control downstream flooding and generate electricity. But the massive earthen dam also created a sprawling 245,000-acre reservoir upstream, where native fish and new species planted by the state thrived some years but not others. The main problem was the reservoir's fluctuating water levels, which often prevented the growth of shoreline vegetation where perch and other forage fish could live when the plants were submerged. So Montana looked for another forage species that would feed and fatten the reservoir's walleye and other game fish.

decades, waves pounding the shoreline carry sediment that smothers the incubating eggs, causing cisco production to suffer.

Cisco numbers also decline when the Corps of Engineers releases water from the dam in winter. "Decreases in reservoir elevation, which dewater incubating cisco eggs, reduce young-of-year cisco abundance, because cisco typically spawn in 3 to 10 feet of water," Headley says. His team's annual shoreline spawning surveys have documented the positive effect of early ice and consistent reservoir pools.

"Fort Peck experienced water level drops of up to 8 feet during the winters of 1989, 1996, 2003, and 2007, resulting in low relative abundance of young-of-the-year cisco," he says. "In contrast, when water levels were increasing over the winter of 1993-94, and again in 2008-09, we saw two of the best year-classes of cisco."

What's more, a filling reservoir inundates previously exposed shoreline vegetation, creating blooms of zooplankton that fuel the aquatic food chain.

GAME FISH RESPOND

How did all this affect Fort Peck's walleye and other predator fish populations? Headley says it took years to start figuring that out, "and we're still learning."

Cisco numbers boomed in the first years after introduction, thriving on the reservoir's abundant plankton. But the fast-growing fish grew too big too quickly for smaller walleye to consume. Once a cisco exceeds 7 inches, walleye shorter than 15 inches can't kill or consume them.

Then a decline in plankton during a succession of drought years in the late '80s and early '90s produced slower cisco growth rates. That, it turns out, was good news. Headley says the slower-growing cisco stayed small enough for the predator fish to get their jaws around them.

And there are lots of predator species. Annual netting surveys on the reservoir have turned up adult, yearling, and juvenile cisco in the stomachs of walleye, sauger, northern pike, channel catfish, smallmouth bass, Chinook salmon, lake trout, and even the tiny-mouthed goldeye. The piscivores added bulk like weightlifters on steroids. In the early 1990s, FWP fisheries crew began seeing walleye longer than 25 inches and northern pike greater than 35 inches during annual netting surveys. Fall creel surveys of lake trout anglers during this time showed a 50 percent increase in average size, from 4 pounds to almost 6 pounds.

Trophy-class game fish are now commonplace on Fort Peck. Headley credits cisco for record-setting weights during walleye tournaments and for growing numbers of jumbo smallmouth bass and Chinook salmon. State records for both species were set in 2020 and broken in 2024.

Could other walleye waters benefit from the addition of cisco? Perhaps, Headley says, but the forage fish might end up doing more harm than good. "For instance, at Canyon Ferry Reservoir they could eat up the larger daphnia [freshwater shrimp] that are so important for yellow perch and rainbow trout."

ADJUSTING TO CISCO

Even in Peck, all is not entirely rosy. While some anglers are reeling in the biggest fish of their lives, others struggle to find those lunkers. Catch rates have declined. Last summer, fishing success for walleye was measured at an underwhelming 0.4 walleye per hour. In other words, on average it took an angler 2.5 hours to catch a single walleye.

The reason is that cisco prefer deep, open water and walleye are following them there. Cisco are native to the Great Lakes and the deep, cold lakes of the Canadian North. Perhaps owing to their northern pedigree, they stay away from the submerged vegetation along shorelines where young perch, shiners, and other prey fish hang out. They also prefer cold, clear water over the warm, turbid water in Fort Peck's shallows. As a result, the oil-rich salmonids spend most of the year, except during late fall spawning, deep in the middle of the reservoir.

And where prey fish go, predators follow. "It's not uncommon for fisheries staff to capture walleye while conducting deep-water gill

NOT TOO LARGE Right: Three cisco caught in survey nets set by FWP crews. When cisco grow over 7 inches long, mid-size game fish have a hard time fitting the forage species into their mouth. But smaller cisco provide calorie-rich food for not only walleye but also smallmouth bass, northern pike, lake trout, Chinook salmon, and even channel catfish (below), which will follow cisco to the reservoir depths.

PHOTOS: ANDREW MCKEAN

HAVING A MONSTER BALL Above left: Thanks to cisco, Fort Peck Reservoir offers some of the best ice fishing for large and abundant lake trout in the Lower 48. Anglers drill holes over humps on underwater points and nab the freshwater char as they move up from the depths to feed in later afternoon. Above right: Starting in the 1990s, FWP crews started seeing more walleye over 25 inches. These days, reports of anglers hauling in fish topping 30 inches are not uncommon.

PHOTOS: NATHAN COOPER

netting surveys that target cisco, Chinook salmon, and lake trout in 60- to 100-foot depths," says Headley. "Walleye at those depths are unheard of in most reservoirs. We've also netted big northern pike and even channel catfish in this benthic [bottom-of-the-lake] habitat."

Catching these fish in Peck's oceanlike conditions can be hard, but not impossible. Dalbey, the retired regional manager, has seen how advances in sonar technology have allowed anglers to find game fish by locating large schools of cisco and then jigging cisco-imitating lures. "With sonar, anglers are even able to locate very large walleye and other game species and assess if those fish are interested in the lures they are offering. If not, they change lures or go searching for other large fish that are actively feeding," he says.

Anglers without sonar units can look for occasionally surfacing cisco in the summer and expect to find game fish nearby, including a healthy number of what Headley calls "in-between" walleye in the 15- to 20-inch range. "Cast your crankbait along the periphery of the surface disturbance," he says.

Even anglers without a boat can catch walleye in late spring by casting into submerged vegetation from shore.

Anglers enjoying Fort Peck's game fish bounty are seeing the results of something fish and wildlife managers rarely do anymore—introduce non-native species. There have been just too many failures and even disasters. But some Montana introductions have succeeded, like ring-necked pheasants and rainbow trout. And as anglers hook into some of Montana's biggest walleye, bass, and pike (if they can find them), they can give thanks to another success story—those double bacon cheeseburgers with fins that FWP first stocked in Fort Peck 41 years ago.

42 Years of Chinook Salmon

One of the primary beneficiaries of the open-water forage provided by cisco is Fort Peck's surprisingly robust Chinook (king) salmon fishery. But if you think the big landlocked salmon were planted in the reservoir to take advantage of the cisco, you have it backward.

"Chinook were actually introduced the year before the cisco introduction, in 1983," says Fort Peck fisheries manager Heath Headley. "I don't exactly know what the fisheries managers at the time thought those salmon would be eating, but it's been a case of a nearly perfect match of predator and prey."

Both cisco and Chinook are open-water, cool- to cold-water species. By the time juvenile salmon grow large enough to convert their diet from smaller shoreline minnows to the larger cisco, they're also strong enough to chase down the bait fish in open water. Chinook raised in FWP's Fort Peck hatchery are stocked as 4- to 5-inch fingerlings in the spring. They grow massive over the next three or four years feeding on cisco in the reservoir's deepest water, just behind Fort Peck Dam.

PLENTY BIG Though not as large as their ocean brethren, the Chinook salmon in Fort Peck are one of Montana's largest game fish.

One of the metrics Headley uses to assess the benefit of cisco is the increasing size of Fort Peck's salmon. The state-record Chinook weighed 31.13 pounds in 1991 and 32.05 pounds in 2020. In 2024, a 38-inch 32.62-pounder was hooked and certified as the current state-record.

A swimming lesson

By Tom Dickson

One late-spring afternoon when I was 18 years old, I failed to prevent a friend from doing something really dumb.

It was a warm, sunny Saturday, and a bunch of us were taking turns bodysurfing down a long stretch of rapids in a river near town. My friend Tony told us he couldn't swim but wanted to try anyway—it looked so fun! I urged him not to but didn't insist hard enough. After waiting until everyone else had gone down the half-mile series of Class III rapids, Tony waded into the waist-deep pool above the turbulent water and let himself slide in. Watching from a high bank, I saw him get sucked underwater in the first rapid and come up gasping for air. *He's not going to make it*, I thought.

I ran downstream on the riverside trail, catching glimpses of him through the trees as he struggled to stay afloat. The trail dropped down to a rock shelf that jutted into the frothy current and created a small eddy where floaters could swim to shore. Reaching the shelf just as Tony passed by, his arms flailing, I jumped in.

I managed to get one arm around his chest and tried to sidestroke us into the eddy. But Tony, frantic for air, climbed onto my body and pushed me underwater. I thought then that we both were going to drown. Fortunately, another buddy extended himself backward into the river so I could grab his foot and pull us to shore. Tony coughed up water for a few minutes but otherwise was okay.

Later he told me that he'd grown up in a small rural town without a public pool and had never taken swimming lessons. That surprised me. I'd learned to swim at age eight and, though never a strong swimmer, continued taking lessons into my early teens, including junior lifesaving.

I've been thinking once again about swimming and drowning after the Centers for Disease Control (CDC) released a report last year showing that fatalities have slightly increased since 2020 following decades of declining numbers. Accidental drowning deaths rose from an average of 4,200 per year in 2001–2019 to 4,500 in 2020–2022—a 7 percent increase.

No one knows why. One factor could be that fewer kids received swimming lessons when many public pools closed during the COVID-19 pandemic, and the facilities have since faced shortages of trained instructors and lifeguards.

Bear in mind that deaths from drowning—1.3 per 100,000 people per year—pale compared to deaths by heart disease (167/100,000), cancer (143/100,000), and stroke (40/100,000), according to the CDC. And drowning rates have dropped drastically over the past century, from 6.3/100,000 in 1925 to 4.1 in 1950 to 3.2 in 1980, due to the increase in swimming instruction, lifeguards, and public pools, and the growing use of lifejackets.

Still, 4,500 deaths per year is tragic, equating to 12 drowning deaths nationwide each day. Most troubling: Drowning continues to be the leading cause of death for children between the ages of 1 and 4.

I love to see kids and adults swimming in lakes, ponds, rivers, and reservoirs. It reminds me of when I was younger and would jump into any open water I could find. I still swim in Helena's Spring Meadow Lake a few times each summer, paddling around with a snorkeling mask and looking down at fish.

Studies show that swimming outdoors increases secretion of dopamine—the hormone that creates feelings of euphoria, excitement, and enjoyment. But it's always smart to be careful around water, especially cold lakes and rivers. According to the CDC, Montana has the third-highest rate of drowning per capita, behind only Alaska and Hawaii.

This coming summer, consider taking a dip. But if you don't know how to swim, take lessons this spring at an indoor pool. And make sure your kids or grandkids receive instruction, too. The YMCA and Red Cross offer low-cost lessons. In open water, always swim with a partner so you can help each other out if things go south. When in or on a boat, canoe, SUP, or kayak, always wear a lifejacket. The new inflatable models are so light you don't even know they're on.

And if you ever have a friend who can't swim well or at all, but tries to do something foolish around water, please try harder than I did to talk them out of it.

*Tom Dickson is editor of M*ontana Outdoors.

ILLUSTRATION BY STAN FELLOWS

Rufous hummingbird

Selasphorus rufus

By Julie Lue

SCIENTIFIC NAME *Selasphorus* is Greek for "light-bearing," and *rufus* is a Latin word that means "reddish."

CHRIS MCGOWAN

When I was a kid, sometimes I would hold an arm outstretched below the hummingbird feeder, hoping one of the birds would take advantage of the handy perch provided by my index finger. Usually I'd give up after 10 minutes or so, my arm too sore and shaky to continue. I was surprised one day when an orange-feathered hummingbird landed on my hand.

It was a rufous, one of those beautiful but belligerent hummers not known for their tolerance of others, regardless of species. I held my breath and admired its tiny claws and dusty-orange plumage, the flash of iridescent feathers at its throat. It cocked its head and looked at me for a second, then zoomed off to harass other hummingbirds who dared approach that precious bottle of sugar water.

IDENTIFICATION

Rufouses are the only orange hummingbirds found in Montana. The male is a rusty color, with a white bib and a bright patch of feathers on its throat, called a gorget, that appears almost blaze orange when viewed at certain angles. A female or immature male has an iridescent green head and back, a whitish breast washed with rufous coloring along the sides, and occasionally a few orange feathers on its throat.

Both males and females make chirping and squealing sounds and also produce a hum with their wings. The male can generate a scratchy, chattering noise by moving his wing and tail feathers while diving at high speed.

MIGRATION

Though some rufous hummingbirds breed in western Montana after arriving in late April or early May, many seen here are just passing through. The species tends to follow an elliptical migration route. In spring, the birds head up the West Coast as far north as Alaska. After breeding season, they loop south over the Rocky Mountains.

Avian scientist Eric Rasmussen, who has been banding hummingbirds at the MPG Ranch near Florence since 2016, says he sees more rufous hummingbirds beginning in midsummer, and most of these are probably returning from Alaska and Canada. Their "fall" migration actually occurs in July and August, when rufous hummingbirds take advantage of generous blooms in the high country. They spend their winters in Mexico and may also be seen occasionally in the southeastern United States.

While many bird species migrate, the rufous hummingbirds' journeys are especially daunting. They will fly as far as 3,900 miles each way in the longest known migration, proportionate to body length, of any bird species. A comparable migration route for humans, proportionate to body length, would top 80,000 miles—or more than three times the circumference of Earth.

FOOD

Rufous hummingbirds are rarely willing to share flower patches or hummingbird feeders, even along migration routes. Both males and females aggressively guard their territories. As with other hummingbird species, their long, slim bills allow them to reach the nectar in flowers, which in turn benefit as the birds transfer pollen from one bloom to another. Favored flowers include columbine, paintbrush, penstemon, gilia, fireweed, larkspur, and mint. The birds supplement their floral diet with tiny insects and spiders, tree sap from wells drilled by red-naped sapsuckers, and artificial nectar from feeders.

These tiny, warm-blooded creatures burn a lot of fuel while foraging. They spend much of the day hovering or performing other high-intensity maneuvers, their tiny wings beating 50 to 60 times *per second*. To save energy and survive cooler temperatures, rufouses power down at night, entering a sort of semi-hibernation called torpor. Their heart rate and respiration slow, and their body temperature drops to as low as 54 degrees Fahrenheit.

BREEDING

On their breeding grounds, male rufouses show off their flying skills in dramatic courtship displays. But after mating, possibly with more than one female, males make no contributions to raising offspring. Females build a 2-inch-wide, cuplike nest, knitting together the downy parts of plants with spider webs, then covering the outside with a mosaic of bark and lichens. They typically lay two eggs the size of small jellybeans. After the chicks hatch, the mother bird feeds them tiny insects and nectar. By 19 days old, the young fledglings learn to fly and leave the nest.

Julie Lue is a writer in Florence, Montana.

THE **OUTSIDE** IS IN US ALL.

Whether it's by fishing, camping, skiing, mountain biking, boating, hiking, wildlife watching, or **exploring a state park during winter,** Montana is a state where everyone can find their own way to connect with the natural world. Around here, **the outside is in us all.**

HOTEL MEADE AND SKINNER'S SALOON AT BANNACK STATE PARK. PHOTO BY JOHN LAMBING

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